22 Questions for Streetfighter

By Captain Wayne P. Hughes, Jr., U.S. Navy (Retired)

Many design features have yet to be worked out, but modeled on the small coastal combatants of foreign navies—here, the Israeli Sa'ar 5-class corvette *Eilat*—Streetfighter will give the U.S. Navy new capabilities for the inshore battlespace.

In the November 1999 *Proceedings*, "Rebalancing the Fleet" introduced the concept of a "streetfighter" as an essential element of the 21st-century U.S. Navy. The article espouses a force for access into an enemy's defended waters, clearing the way so that our blue-water Navy can safely exercise its great power to influence events ashore.

From many quarters a number of apt questions about streetfighter have been posed. In what follows I try to answer those that pertain to the foremost task of a streetfighter: the ability to fight in the "back alleys" of an enemy's home waters.

➤ *You say streetfighter will facilitate access. What do you mean by access?*

Here, access is the ability to move into the coastal waters of an enemy, first to deliver air, missile, and gunfire attacks, and then to deliver the means of war to the littorals' land side and to sustain Marines, soldiers, Air Force air power, and coalition forces fighting on the ground. In a larger sense, it means sea control for a specific littoral operation through dominance of local waters.

➤ *Is streetfighter the foot in the door for a small-ship Navy?*

No streetfighter, even stretched to its limits, could play the two primary roles of the blue-water Navy—to secure the world's oceans for safe transit and trade among all peace-loving states, and to project offensive combat power to influence events ashore in peacetime, crisis, or war. The streetfighter concept eschews economies of scale that are the great strength, advantage, and cornerstone argument for large, multipurpose warships.

➤ *Expound on the statement in the November article that the Navy elements to support access will "cost less than 10% of the ship budget, comprise more than 25% of the numbers in the fleet, and suffer most of the losses."*

The streetfighter budget cannot exceed 10% of the cost of Navy ships because streetfighter only fills a niche. It is vital one that demands our attention, but the blue-water Navy must safeguard the high seas and be free to project its influence on the land side of the world's littorals. The 10% ceiling also applies to the crews for streetfighters, but manning them ought to take closer to 5%.

Fleet numbers of 25% or greater can be arrived at by estimating the replacement cost of 300 blue-water combatants (the Economy A force) at about $1 billion each, or $300 billion. Hence, the share for streetfighter construction (the Economy B force) is at most 10%, or $30 billion.[1] If we price streetfighter at $80 million each in se-

ries production, and buy a flotilla of 100 at 10 per year, the total investment is then $8 billion. But unlike blue-water ships, the streetfighter needs mobile sustainment, analogous to the tenders that once serviced diesel submarines. In computing this overhead, we estimate that ten $500-million support ships will be needed, totaling $5 billion. Therefore, the investment in Economy B would be $13 billion. If, however, we assign to streetfighters (not the support ships) a 10-year life but amortize Economy A ships over 30 years, then the comparative investment to maintain Economy B might be more like $29 billion.

Streetfighters would suffer most of the losses because they would be the point of the access sword. These small craft would be out in front, so when the contest for coastal access is intense, they would see the most intense fighting.

➤ *The article is silent on aircraft, except to say that streetfighter might carry or be supported by manned, and in due course by unmanned, aircraft. Can you amplify?*

One of the first things learned by a task analysis of coastal operations is that low-flying aircraft, not big ships or submarines, are the alternative to streetfighters. For overt reconnaissance, aircraft altitude and speed give them a greater sweep rate, but streetfighter's stay time is longer. Aircraft can fly on both sides of a coastline, but waterborne vessels are better for patrolling a station in a choke point and off a port or landing site. Surface craft are better for escort of slow-moving merchant ships, but aircraft are superior for speeding to a datum or quick visual inspection of radar contacts. A combination of the two is superior to either alone for blockade, inspection, and seizure. A combination also looks superior for across-the-beach support of fighting ashore. When subject to attack each has its advantages and weaknesses, but one small surface combatant carries more offensive ordnance than several aircraft. Unit procurement costs are similar, but annual operating costs probably would favor streetfighter when base support afloat or ashore is factored in.

➤ *Big ships are comfortable and habitable, and they carry weeks of self-sustainment. Streetfighter seems to have no such qualities. How will a squadron be supported?*

All design considerations for streetfighter should reflect plans for support afloat. The smaller model should be sized so that a high-speed mother ship can carry six or eight. The upper limit is therefore around 300 tons, and the craft must be configured to launch and recover in an open sea. The crew should be small, so crew endurance probably is going to be the limiting factor on mission time. Habitability, sustainment, and replacement crews must reside in the mother ship. Aircraft would have to be based in the mother ship, too, thus limiting the radius of action of the small streetfighter for some tasks.

Larger versions of, say, 1,200 tons would have to transit under their own power to their operating theaters and be followed closely by a tender for support. Not having to be carried, the larger versions would enjoy greater flexibility to adapt modern designs for improved sea keeping and payload density. A potential convenience is that six spare destroyer tenders already exist for their support. On the other hand, aircraft carried by 1,200-ton streetfighters would need support by the tender or an accompanying air-capable ship.

Whenever operations are near a friendly state, a small, prepackaged, transportable shore facility is an alternative.

➤ *Won't small combatants suffer in foul weather?*

On the contrary, for fighting in coastal "streets and alleys," foul weather would be the friend of streetfighter, which always would be looking for the cover of night, coasts, shoals, fog, or high waves. Modern hull forms can attenuate the effects of high sea states, but streetfighter's success does not depend on them. A 44-foot yawl in the Bermuda Race is no picnic when the wind is blowing 30 knots, but every ocean sailor knows that a small vessel rides the waves when a big one crashes through them.

➤ *Say more about Streetfighter's stealth properties.*

Low observability seems essential, but assessing the degree of signature reduction across all forms of detection and targeting is a plunge into deep water. The attractiveness of a streetfighter with stealth properties is twofold. First, it is easiest to reduce the radar cross section, wake, infrared signature, and visual detection of a small ship. Second, if there is a flock of small ships, each powerfully armed yet hard to detect, then the enemy will live in continuing fear over whether he has found them all.

➤ *Since the 1960s modular warships have been an ambition unfulfilled. Can you reverse this story of failure?*

The Danish Navy seems already to have done so. It is more a question of details now. Do we have several plugs or one big suite dropped onto a hull? If we think small and modular, then we can arrange for a production base that is ready to roll once the basic hull design is established. We should be able to tool up and produce hulls of a standard design in just a few months. At the same time, we will have flexibility to create affordable new module designs. The hull could serve for 20 or 30 years, with new modules constructed whenever technology offers significant advances.

But there are too many free parameters to get a modular design right on the first try. No systems analyst who understands the variations, opportunities, strategic variables, and need for coordination with Economy A's elements would claim that analysis will substitute for experimentation afloat.

➤ *Don't large, multimission ships such as carriers and Aegis cruisers give flexibility and more combat power in a given hull?*

Yes, that is why we like them. They have more capability for the cost than small combatants. But they have a downside. If a multimission ship is lost (put out of action and sent back for repairs) while performing one task then it is lost for all other tasks as well.

In addition, to say that our finest multipurpose ships, the *Arleigh Burke* (DDG-51)-class guided-missile destroyers, can be fully capable for strike, air defense, antisubmarine warfare, search and rescue, early warning, aircraft carrier and amphibious ship protection, operations other than war, theater ballistic missile defense, convoy escort into a friendly port, or minefield detection and neutralization is to overlook the training demands involved.

➤ *Great "combat power' is described as a virtue of the Economy A component—the blue-water Navy. Can you be more specific?*

Combat potential is a technically more accurate term for what Economy A forces bring to the scene. Combat

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potential is the stuff that when delivered on targets is combat power that diminishes the enemy's hearts, minds, bodies, and machines. In its substantive navy manifestation, it is deliverable ordnance (shells, missiles, bombs, torpedoes, and mines). Another form of combat potential could be termed formidability—e.g., manifest bigness, obvious speed, devilish appearance, and demonstrated cunning.

Streetfighters carry substantive combat potential and deliver combat power in many small bundles. An enemy probably also will see deviltry and cunning in a squadron of streetfighters. Their image is like a gang of "Billy the Kids," runty in stature but lightning fast on the draw. The bullets in their six-guns and a killer's reputation are their combat potential, to persuade, intimidate, or destroy.

Economy A ships, the power-projection component of the Navy, have great potential because they carry large arsenals and are formidable looking. But if an enemy puts one of them out of action then its massed potential is never transformed into combat power.

▶ *Are you saying that big warships are too vulnerable?*

Yes and no. One kamikaze sometimes was enough to do great damage to (but not to sink) a large aircraft carrier. The unpleasant fact is that early antiship cruise missiles were designed with large warheads and kinetic energy sufficient for one or two hits to put a cruiser or larger warship out of action. Data from World War II show that the weight of explosives it took to put a warship out of action—even those with extensive armor and compartmentation—increased only in proportion to the cube root of the displacement. It is unlikely that existing large warships are less vulnerable.

On the other hand, it takes about four times more warhead weight to sink a large warship than to put it out of action. During the 1980s' tanker war in the Persian Gulf, big commercial ships often took a missile or mine hit without being stopped. Thus, there is likelihood that a future warship of comparable size can be designed and built to take several missile hits and sometimes a torpedo or mine without being rendered helpless.

▶ *Surface-to-air missile defense systems such as Aegis take space, weight, crewing, and dollars. What kind of defense do you envision for streetfighters?*

A 300-ton streetfighter would depend on stealth characteristics, soft kill, numbers, and the ability to lose itself "in the clutter." It could carry light antiair weapons such as Stingers. The design philosophy should be that visual detection of it will predominate, no present missile guidance system will detect and home on it, and added safely comes from confronting an enemy with a swarm of targets.

A larger version of 1,200 tons might carry not only soft kill systems but also deployable decoys and Rolling Airframe missile (RAM) or the equivalent, while accepting that low observability and active defense are conflicting characteristics.

▶ *Are you really willing, then, to let little streetfighters be sunk and U.S. sailors die?*

Streetfighters must be designed to lose. If no risk of loss is contemplated, then they are a poor design concept, because they forego the economies of scale that are a prominent advantage of Economy A warships. To limit the loss of life, streetfighters should be manned austerely. The small version could be crewed in a "cockpit" that doubles as an escape capsule. I would expect that after a missile hit of Exocet size or larger, the ship would be useless and so could be abandoned without regret.

Large warships of 8,000 to 12,000 tons can be put out of action after one or two missile hits, too, yet they are too valuable to abandon. Their crews (numbering in the hundreds) are subject to further hits and loss of life while containing the damage. The successful investment in damage control in World War II made sense primarily because ships as small as destroyers often could keep fighting after taking several shell or bomb hits.

▶ *Why not do a more comprehensive systems analysis to refine the design and confirm streetfighter's cost-effectiveness before bending metal into experimental designs?*

No quarrel with conducting systems analyses concurrent with the construction of a small experimental squadron to gain experience at sea. The danger is that the Navy will study the problem to death with ships on paper. Possibilities are almost without limit, and we may never feel satisfied that we have everything right. In addition, we are not talking about an investment of billions of research-and-development dollars. I venture that we could design and build three 1,200-ton streetfighters or eight 300 tonners for much less than a billion dollars. Nor would they be designed from scratch. Foreign navies have done much of the systems analysis in the course of designing their many inshore combatant variants.

▶ *Why not just borrow some foreign navies' concepts and small combatants for experimentation?*

There are significant design opportunities not yet incorporated by overseas navies. Perhaps we can profit from this rare opportunity to choose wisely from among the best features of foreign small combatants.

More fundamentally, we need small-ship design experience of our own. For instance, the Navy design models for parametric studies of warships lose their applicability below around 2,000 tons displacement. Shipyards need experience in constructing small combatants, too.

▶ *Do you really believe that the roles of the access navy and the projection navy are distinct? Won't the streetfighters coordinate with the blue-water navy?*

Network-based cooperation will help each to cover and be covered by the other. Consider a modern enemy coastal defense "fleet" consisting of small combatants with heavy firepower aided by inconspicuous small craft and submarines to detect and target our projection navy, and supplemented ashore by a complex of sensors, missile sites, land-based aircraft, and very long-range artillery. The land sites are screened by the small combatants offshore at the same time that the land sites cover the forces afloat. Our employment is a mirror image of this enemy campaign plan, in which the rear echelon is sea based. The blue-water fleet covers the streetfighters who screen them in return. After some fierce fighting, the projection forces will have safe access to move in and pound the enemy's deeper land-side defenses.

Composite tactics will be hard to develop, but technology and tactics must be two sides of a single coin.

▶ *Can't U.S. Coast Guard cutters perform the streetfighters' roles?*

In small part, yes. Harbor defense, counterintrusion, and counterinfiltration are accepted Coast Guard tasks. But streetfighter must be designed to go up against major sea-denial capabilities. In addition, the Coast Guard is very busy and probably will continue its heavy commitment to fighting illegal immigration and smuggling.

▶ *Do we really need 100 streetfighters now?*

The reason to act now is to build up before we face a major sea-denial force. If we start today it will take about 15 years to deploy 100 streetfighters—up to five years for experimentation and time to overcome reluctance in defense, budget, and congressional staffs, ten more years to build the force, at ten per year.

If we possessed those 12 squadrons, each with eight streetfighters, today, we could employ them as follows: one squadron to replace blockade and inspection forces in the Adriatic; two with the Republic of Korea Navy in the Yellow Sea; two to replace many of the U.S. Navy ships now conducting counterdrug operations in the Caribbean; one Mediterranean squadron alternating between Rota and La Maddalena to supplement the Sixth Fleet in peacetime engagement exercises and port visits; two tender-based squadrons in the vicinity of the Strait of Hormuz, to reconnoiter and exercise what used to be called gunboat diplomacy; two tactical development squadrons in San Diego, Puget Sound, Little Creek, Annapolis, Newport, or Guantanamo Bay; and smaller detachments in support of peacetime engagement, making port visits and conducting joint exercises in places such as the East and South China Seas, the Baltic and Black Seas, and the east and west coasts of Africa

▶ *Doesn't streetfighter jeopardize existing warship building programs: CVX, LPD-17, DD-21, and SSN-21?*

How can it be so? The present fleet is heavily committed, overworked, and needs relief. Streetfighter apart, at the Navy's present building rate we will soon have a 200-ship navy, and only half will be less than ten years old. Even The Brookings Institution wouldn't argue that we could cancel DD-21 at $800 million and replace it with streetfighter at $80 million.

The projection navy must stand or fall on its own merits. Economy A and Economy B are complementary components of one fleet configured to go wherever it is needed.

▶ *If streetfighter is a good idea, why has it taken this long for recognition?*

Among the rest of the world's navies its virtues are long recognized. But streetfighter was irrelevant for the U.S. Navy until the collapse of the Soviet Union. It is operation in coastal waters that concerns us now, and the impending need for safe access as littoral waters become more dangerous.

▶ *What is the unexpressed threat to streetfighter?*

We won't know if there's a downside until we experiment. The biggest danger is that streetfighter will be conceived as a junior variation of the projection navy: the same habitability standards, spacious bridge, electronically comprehensive combat information center, offices, and paperwork; a galley with cooks and mess cooks; defenses that are supposed to defeat every attack; stocks for months at sea; standard damage-control teams and procedures; and a guarantee for each young captain that one grounding or failed inspection will send him packing.

Streetfighter crews must train to operate as a team at high speed in shallow waters; to lurk in coves or behind islets and against cliffs; to disappear into fishing fleets and coastal traffic; to defeat enemy missiles without firing a shot; to destroy enemy ships, aircraft, and submarines by detecting with one unit and vectoring two or three others to attack from another direction; to team with aircraft; to keep weapons free to fire yet without fratricide; to eat meals ready-to-eat (MREs) off hot plates; and to swap crews without a ballistic-missile-submarine-like turnover. Everyone must know that streetfighter operations will be as different from amphibious assault ship operations as submarine operations in days of yore were different from fighting in a battle line.

▶ *What is the overlooked upside?*

First, the debate over the designs and accompanying tactics will make the projection navy conscious of its vulnerability in coastal waters.

Second, the trend in scouting, tracking, and targeting systems will almost surely lead to future networks of smaller, more dispersed, more mobile, and better concealed sensors and weapons, whether on land, at sea, or in the air. Experience now with small combatant tactics and technology will give us a leg up against exotic threats such as space-to-surface missiles, very long range (e.g., one hundred mile) artillery, and very fast (e.g., Mach 7) missiles, each with precision homing.

Third, although one can hardly sell streetfighter for its value in affording early command to young officers, that is a collateral benefit almost beyond compare.

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[1]Economy B purchases and operates the small vessels (manned and unmanned) that provide access. Economy A refers to the blue-water component that exploits access by delivering combat power.

Captain Hughes is on the faculty of the Naval Postgraduate School and author of *Fleet Tactics and Coastal Combat* (Annapolis: Naval Institute Press, 1999). He coauthored "Rebalancing the Fleet" in the November issue of *Proceedings*.